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EXAMINER
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HAN, QI

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/606,807

Applicant(s)

LEE ET AL.

Examiner

Qi Han

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because the length of the abstract is over 150 words. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 20 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Regarding claim 20, the claimed subject matter “the **phonetic string** from data collected from multiple users entering a training text in the second language” lacks sufficient support in the specification. The closest disclosure (see specification: pages 28-31, section “multilingual training for modeless entry”) only teaches mixed-language comprising Chinese (first language) with English (second language) that has been defined as non-phonetic text (see page 16, line 9), so that this subject matter is not described in the specification in such a way as to enable one skilled in the art to make and/or use the claimed invention, without undue effort.

Regarding claim 31, the claimed subject matter “the language model being trained in a second language” lacks sufficient support in the specification. The closest disclosure teaches that “the language input system employs a statistical language model” and “Both models (English and Chinese typing models) ... are guided by the language model (e.g., a Chinese language model) to output the most likely sequence of characters” (see specification: page 10, line 19 to page 11, line 8), and “a language model  $P(H)$  for Chinese” (see specification: page 28, lines 20-28), wherein Chinese refers to first language and English refers to second language, which suggests that only one language model for Chinese (first language) and nowhere teaches the language model being trained in a second language as claimed, therefore, this subject matter is not described in the specification in such a way as to enable one skilled in the art to make and/or use the claimed invention, without undue effort.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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3. Claim 47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 47 only recites a preamble and there is no any further limitation at all, so that this incomplete claim is rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Claim Rejections - 35 USC § 102***

Rejection under 35 U.S.C. 102(e), Patent Application Publication or Patent to Another with Earlier Filing Date, in view of American Investors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application of patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-8, 26-29 and 48 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (US 6,073,146).

Regarding **claim 1**, Chen discloses a system and method for processing Chinese language text (title), comprising:

enabling a user to input an input string containing at least first and second languages without switching entry modes (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) text to be processed', 'entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system'); and

converting the input string to an output string that contains the first and second languages (column 4, lines 28-61, 'converting the phonetic input into the Hanzi form').

Regarding **claim 2** (depending on claim 1), Chen further discloses that the first language is a primary language and the second language is secondary language used less frequently than the primary language, (column 7, line 12-9, ' "mixed language/text" is entered, i.e. English or other non Chinese text is included with the Chinese text input', 'non Chinese text is uncode (unmarked) with a diacritic', which suggests that Chinese is primary language, and English or other non Chinese text is secondary language, which is inherently less frequently used than Chinese because Chen's major invention focuses on processing Chinese language text (see title) ).

Regarding **claim 3** (depending on claim 1), Chen further discloses applying a spelling model to the input string to derive output strings that correct spelling errors in the input string, (Fig. 4 and column 11, lines 60-61, 'spell checked 405', 'an abbreviation or alternate spelling 407', 'error checked 408'; column 12, lines 35-66, 'shorthand spelling', 'an erroneous spelling is detected 408', 'the most probable syllable is displayed 409', which suggests the system includes an equivalent mechanism as the claimed spelling model(s), for processing input string and outputting corrected string).

Regarding **claim 4** (depending on claim 1), Chen further discloses that the converting comprises applying a language model to the input string, (abstract, 'word

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string is analyzed using ... a statistical language model'; column 18, line 49, 'statistical model').

Regarding **claim 5**, Chen discloses a system and method for processing Chinese language text (title), comprising:

enabling a user to enter phonetic text and non-phonetic text as a common string without switching modes, (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) text (interpreted as non-phonetic text) to be processed', 'entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system'); and

converting the phonetic text to corresponding language text, while leaving the non-phonetic text unconverted, (column 4, lines 28-61, 'converting the phonetic input into the Hanzi form (language text)'; Fig. 4 and column 47-55, 'non Chinese words can be identified 403', which suggest that the converting step is only for Chinese phonetic text, not for non Chinese words).

Regarding **claim 6** (depending on claim 5), as stated above, Chen discloses that the phonetic text is Chinese Pinyin (column 4, lines 23-61).

Regarding **claims 7-8** (depending on claim 5), the rejection is based on the same reason described for claims 3 and 4 respectively, because the claims 7 and 8 recite same or similar limitation(s) as claims 3 and 4 respectively.

Regarding **claims 26-29**, they recite a language input architecture. The rejection is based on the same reason described for claims 1-4 respectively, because the claims 26-29 recite same or similar limitation(s) as claims 1-4 respectively.

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Regarding **claim 48**, it recites one or more computer-readable media. The rejection is based on the same reason described for claim 5, because the claim recites same or similar limitation(s) as claim 5.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen.

Regarding **claim 9**, Chen discloses a system and method for processing Chinese language text (title), comprising:

receiving an input string containing at least first and second languages, (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) text (interpreted as non-phonetic text) to be processed', 'entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system'); and

determining at least one candidate string in the first language that may be used to replace the input string, (column 4, lines 28-61, 'converting the phonetic input into the Hanzi form (first language)'; Fig. 4 and column 12, lines 35-66, 'an erroneous spelling is detected 408', 'the most probable syllable is displayed 409'). But, Chen does not expressly disclose that the step of determining candidate string stated above is "based on a **probability** of how likely the first candidate string was incorrectly entered as the input



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string in the first language”. However, the feature of using probability for determining candidates is well known in the art as evidenced by Chen himself who further discloses using statistical model for the notional words (column 5, line 8), which is inherently based on probability calculations. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen in view of well known prior art by specifically providing statistical model based on probability calculation for the candidates, as taught by Chen, for the purpose of further removing ambiguity (Chen: column 5, lines 7-8) and selecting the most probable candidate for best matches (Chen: column 12, lines 64-66).

Regarding **claim 10** (depending on claim 9), Chen further discloses that selectively performing one of (1) converting the input string to the candidate string in the first language, or (2) leaving the input string in the second language, (column 4, lines 28-61, ‘converting the phonetic input into the Hanzi form (language text)’; Fig. 4 and column 47-55, ‘non Chinese (e.g. English) words can be identified 403’, which suggest that the converting step is only for Chinese phonetic text, not for non Chinese words).

Regarding **claim 11** (depending on claim 9), the rejection is based on the same reason described for claim 2, because the claim recites same or similar limitation(s) as claim 2.

Regarding **claim 12** (depending on claim 9), as stated above, Chen discloses that the input string of the first language comprises phonetic text and the input string of the second language comprises non-phonetic text, (column 4, lines 23-61, ‘entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system’,

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‘allows a mixed Chinese and non Chinese (e.g., English) text (interpreted as non-phonetic text) to be processed’).

Regarding **claim 13** (depending on claim 9), as stated above, Chen discloses that the first language is Chinese and the second language is English, (column 4, lines 23-61, ‘entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system’, ‘allows a mixed Chinese and non Chinese (e.g., English) text (interpreted as non-phonetic text) to be processed’).

6. Claims 14-25 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of well known prior art (MPEP 2144.03), and further in view of Hyde-Thomson et al. (US 6,487,533 B2) herein after referenced by Hyde-Thomson .

Regarding **claim 14**, Chen discloses a system and method for processing Chinese language text (title), comprising:

receiving an input string containing at least first and second languages, (column 4, lines 23-61, ‘allows a mixed Chinese and non Chinese (e.g., English) text to be processed’, ‘entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system’);

determining at least one first candidate string that may be used to replace the input string, (column 4, lines 28-61, ‘converting the phonetic input into the Hanzi form (first language)’; Fig. 4 and column 12, lines 35-66, ‘an erroneous spelling is detected 408’, ‘the most probable syllable is displayed 409’). But, Chen does not expressly disclose that the step of determining candidate string stated above is “based on a **probability** of how

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likely the first candidate string was incorrectly entered as the input string in the first language". However, the feature of using probability for determining candidates is well known in the art as evidenced by Chen himself who further discloses using statistical model for the notional words (column 5, line 8), which is inherently based on probability calculations. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen by specifically providing statistical model based on probability calculation for the candidates, as taught by Chen, for the purpose of further removing ambiguity (Chen: column 5, lines 7-8) and selecting the most probable candidate for best matches (Chen: column 12, lines 64-66).

Chen further discloses determining at least one second candidate string that may be used to replace the input string, (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) (second language) text to be processed', 'non Chinese words can further processed, e.g. spell checked (herein inherently including providing candidate for correcting misspelling) by known systems that process these languages'). But, Chen does not expressly disclose the step of determining second candidate based on a second probability of how likely the second candidate string was incorrectly entered as the input string in the second language. However, an official notice is taken that the feature of determining a candidate string based on a probability of correctness in the input string in English language (second language) is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen by specifically providing a mechanism of determining a candidate string based on a probability of correctness in the input string in English language, for the purpose of improving reliability for the system.

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Further, Chen in view of well known prior art does not expressly disclose “using the first candidate string if the first probability is higher than the second probability to derive at least one output string containing the first language; and using the second candidate string if the first probability is lower than the second probability to derive at least one output string containing the second language.” However, this feature is well known in the art as evidenced by Hyde-Thomson who discloses unified messaging system with automatic language identification for text-to-speech conversion (title), comprising that the trigraph analyzer examines a text sequence and performs language identification operations, determines a closest match, returns a corresponding language identifier and likelihood (herein interpreted as probability) value to the message inquiry unit (column 3, lines 6-17). Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen in view of well known prior art by specifically providing a mechanism of determining language based on a likelihood value, as taught by Hyde-Thomson, for the purpose of identifying a language for further processing (Hyde-Thomson: column 7, lines 13-21).

Regarding **claims 15-18** (depending on claim 14), the rejection is based on the same reason described for claims 11-13 and 10 respectively, because the claims 15-18 recite same or similar limitation(s) as claims 11-13 and 10, respectively.

Regarding **claim 19** (depending on claim 14), Chen in view of well-known prior art in view of Hyde-Thomson further discloses obtaining the first and second candidate strings from a database, (Chen: column 5, line 8, statistical model'; column 6, lines 5-6, 'Chinese dictionary or vocabulary'; Hyde-Thomson: Fig. 4, 'library', 'dictionary', which is inherently equivalent to or includes database).

Regarding **claim 20** (depending on claim 14), as best understood in view of claim rejection under USC 112, 1<sup>st</sup> (see above), Chen in view of well-known prior art in view of Hyde-Thomson further discloses:

deriving the first probability that the first candidate string was incorrectly entered as the phonetic string from data collected from multiple users entering a training text in the first language, (Chen: column 4, lines 23-61, 'entering phonetic Chinese (Pinyin and BPMF) (first language) into computer system'; Fig. 4 and column 12, lines 35-66, 'an erroneous spelling is detected 408', 'the most probable syllable is displayed 409', 'best matches'; column 5, line 8, 'statistical model'; which is inherently include probability calculation and training data for determining a candidate).

deriving the second probability that the second candidate string was incorrectly entered as the phonetic string from data collected from multiple users entering a training text in the second language, (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) (second language) text to be processed', 'non Chinese words can further processed, e.g. spell checked (including providing candidate) by known systems that process these languages'; column 5, line 8, 'statistical model'; Hyde-Thomson: column 3, lines 6-17, 'trigraph analyzer determines a closest match', 'returns a corresponding language identifier and likelihood value', which suggests that combined system is capable of including probability calculation and training data for determining a candidate as claimed).

Regarding **claim 21** (depending on claim 14), Chen in view of well known prior art in view of Hyde-Thomson further discloses displaying the output string in line with the input string being entered by a user, (Chen: Fig. 1, block 1020).

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Regarding **claim 22** (depending on claim 14), the rejection is based on the same reason described for claim 14, because the claim recites same or similar limitation(s) as claim 14.

Regarding **claim 23**, it recites a method. The rejection is based on the same reason described for claim 14, because the claim recites same or similar limitation(s) as claim 14.

Regarding **claim 24** (depending on claim 23), Chen in view of well known prior art in view of Hyde-Thomson further displaying the input string containing the first and second language in a single edit line; and selectively displaying the output string or the input string in the single edit line, (Chen: Fig. 1, block 1020).

Regarding **claim 25** (depending on claim 23), the rejection is based on the same reason described for claim 13, because the claim recites same or similar limitation(s) as claim 13.

Regarding **claim 49**, it recites one or more computer-readable media. The rejection is based on the same reason described for claim 23, because the claim recites same or similar limitation(s) as claim 23.

Regarding **claim 50**, it recites one or more computer-readable media. The rejection is based on the same reason described for claim 14, because the claim recites same or similar limitation(s) as claim 14.

7. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Woodruff et al. (US 5,510,998) herein after referenced by Woodruff.

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Regarding **claim 31**, as best understood in view of claim rejection under USC 112, 1<sup>st</sup> (see above), Chen discloses a system and method for processing Chinese language text (title), comprising:

a typing model to receive an input string and determine a typing error [probability] of how likely a first candidate string was incorrectly entered as the input string, the typing model being trained in a first language, (column 3, line 21, ‘keyboard 1030 to enter Pinyin text input’; column 4, lines 23-61, ‘entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system’; Fig. 4 and column 12, lines 35-66, ‘an erroneous spelling is detected 408’, ‘the most probable syllable is displayed 409’); and

a language model to provide output strings for each of the typing candidates, [the language model being trained in a second language], (Abstract: ‘word string is analyzed using ... a statistical language model’; column 18, line 49, ‘statistical model’, which inherently includes probability calculation, training process and necessary training data).

But, Chen does not expressly disclose “typing error probability”. However, this feature is well known in the art as evidenced by Woodruff who discloses reducing probability of data entry (corresponding to typing) errors (column 2, lines 18-29). Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen by specifically providing probability of data entry (typing) errors, as taught by Woodruff, for the purpose of ensuring accuracy for entered data (Woodruff: column 2, line 3).

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Regarding **claim 30** (depending on claim 26), the rejection is based on the same reason described for claim 31, because the claim recites same or similar limitation(s) as claim 31.

Regarding **claim 32** (depending on claim 31), the rejection is based on the same reason described for claim 2, because the claim recites same or similar limitation(s) as claim 2.

8. Claims 33-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of well known prior art in view of Woodruff, and further in view of Hyde-Thomson.

Regarding **claim 33**, Chen discloses a system and method for processing Chinese language text (title), comprising:

a first typing model to receive an input string and determine a first typing error [probability] of how likely a first candidate string was incorrectly entered as the input string, (column 3, line 21, 'keyboard 1030 to enter Pinyin text input'; column 4, lines 23-61, 'entering phonetic Chinese (Pinyin and BPMF) (herein inherently including string) into computer system'; Fig. 4 and column 12, lines 35-66, 'an erroneous spelling is detected 408', 'the most probable syllable is displayed 409', 'best matches'). But, Chen does not expressly disclose to determine a probability of how likely the first candidate string was incorrectly entered as the input string in the first language". However, the feature of using probability for determining candidates is well known in the art as evidenced by Chen himself who further discloses using statistical model for the notional words (column 5, line 8), which is inherently includes probability calculation for



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determining likely candidate. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen by specifically providing statistical model for the input text that includes a probability for determining a candidate, as taught by Chen, for the purpose of further removing ambiguity (Chen: column 5, lines 7-8) and selecting the most probable candidate for best matches (Chen: column 12, lines 64-66).

Chen further discloses a second typing model to receive the input string and determine a second typing error [probability] of how likely a second candidate string was incorrectly entered as the input string, (column 4, lines 23-61, 'allows a mixed Chinese and non Chinese (e.g., English) (second language) text to be processed', 'non Chinese words can further processed, e.g. spell checked (herein inherently including providing candidate for correcting misspelling) by known systems that process these languages'; column 5, line 8, 'a statistical model'). But, Chen does not expressly disclose determining second candidate using a probability of how likely the second candidate string was incorrectly entered as the input string in the second language, such as English. However, an official notice is taken that the feature of determining a candidate string based on a probability of correctness for an input string in English (second language) is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen by specifically providing statistical model by using a probability for determining a candidate string in English language, for the purpose of improving reliability for the system.

But, Chin in view of well-known prior art does not expressly discloses the probability being is typing error probability. However, this feature is well known in the

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art as evidenced by Woodruff who discloses reducing probability of data entry (corresponding to typing) errors (column 2, lines 18-29). Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen in view of well known prior art by specifically providing probability of data entry (typing) errors, as taught by Woodruff, for the purpose of ensuring accuracy for entered data (Woodruff: column 2, line 3).

Moreover, Chen in view of well known prior art in view of Woodruff does not expressly disclose a search engine to select one of the first and second candidate strings with a highest typing error probability. However, the feature of selecting a candidate between two languages based on probabilities is well known in the art as evidenced by Hyde-Thomson who discloses unified messaging system with automatic language identification for text-to-speech conversion (title), comprising that the trigraph analyzer (inherently including probability calculation) examines a text sequence and performs language identification operations, determines a closest match, returns a corresponding language identifier and likelihood (herein interpreted as probability) value to the message inquiry unit (column 3, lines 6-17). Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Chen in view of well known prior art in view of Woodruff by specifically providing a closest match for selecting a candidate between two languages based on highest probability (a likelihood value), as taught by Hyde-Thomson, for the purpose of selecting appropriating candidate for further processing (Hyde-Thomson: column 7, lines 1-52).

Regarding **claim 34** (depending on claim 33), as stated above, the combined system uses statistical model(s) (Chen: column 5, line 8) for both first language and

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second language, which inherently comprises training data in the languages, which corresponds to the claimed “the first typing model is trained using a first language and the second typing model is trained using a second language.”

Regarding **claim 35** (depending on claim 33), as stated above, the combined system uses statistical model(s) (Chen: column 5, line 8) for both first language and second language (Chen: column 4, lines 23-61, ‘allows a mixed Chinese (first language) and non Chinese (e.g., English) (second language) text to be processed’), wherein statistical model inherently comprises training data in the languages, which corresponds to the claimed “the input string contains phonetic text and non-phonetic text and the first typing model is trained to the phonetic text and the second typing model is trained to the non phonetic text.”

Regarding **claim 36** (depending on claim 33), as stated above, the combined system uses statistical model(s) (Chen: column 5, line 8) for both first language and second language (Chen: column 4, lines 23-61, ‘allows a mixed Chinese and non Chinese (e.g., English) text (interpreted as non-phonetic text) to be processed’, ‘entering phonetic Chinese (Pinyin and BPMF)), wherein statistical model inherently comprises training data in the languages, which corresponds to the claimed “the first typing model is trained using Chinese and the second typing model is trained using English.”

Regarding **claim 37** (depending on claim 33), as stated above, the combined system uses statistical model(s) (Chen: column 5, line 8) for both first language and second language (Chen: column 4, lines 23-61, ‘allows a mixed Chinese and non Chinese (e.g., English) text (non-phonetic text) to be processed’, ‘entering phonetic Chinese (Pinyin and BPMF)), wherein statistical model inherently comprises training data in the

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languages, which corresponds to the claimed “the input string contains Pinyin and English and the first typing model is trained to the Pinyin and the second typing model is trained to the English.”

Regarding **claim 38** (depending on claim 33), the rejection is based on the same reason described for claim 4, because the claim recites same or similar limitation(s) as claim 4.

Regarding **claim 39** (depending on claim 38), Chen in view of well known prior art in view of Woodruff in view of Hyde-Thomson further discloses a mechanism (search engine) for converting the phonetic input into the Hanzi form (output) (Chen: column 4, lines 28-61) and processing non Chinese words (column 11, lines 53-55), which corresponds to the claimed “the search engine converts the input string to the output string.”

Regarding **claim 40** (depending on claim 38), Chen in view of well known prior art in view of Woodruff in view of Hyde-Thomson further discloses a user interface to receive the input string and to display the output string in a common edit line (Chen: column 5, line 56 and Fig.1, ‘graphical interface 1020’, ‘displays the Pinyin characters’ and ‘displays the Hanzi characters’).

Regarding **claim 41** (depending on claim 33), Chen in view of well known prior art in view of Woodruff in view of Hyde-Thomson further discloses graphical interface 1020 (Chen: column 5, line 56 and Fig.1), processing of the text (Chen: column 6, lines 1-65), spell checked for non Chinese language and that computer recognizes the letters representing Pinyin syllable and the syllable is spell checked (Chen: column 11, line 47-63); a text editor (Woodruff: column 35, line 65), which suggest that combined system is

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capable of implementing the functionality as claimed “a word processor embodied on a computer-readable medium comprising the language input architecture”.

Regarding **claim 42**, it recites a language input architecture. The rejection is based on the same reason described for claims 33, 38 and 40, because the claim recites same or similar limitation(s) as claims 33, 38 and 40.

Regarding **claim 43** (depending on claim 42), Chen in view of well known prior art in view of Woodruff in view of Hyde-Thomson further discloses the search engine converts the input string to one of the conversion strings when the first probability is higher than the second probability, (Chen: column 4, lines 28-61, ‘converting the phonetic input into the Hanzi form (first language)’; Fig. 4 and column 12, lines 35-66, ‘the most probable syllable is displayed 409’; Hyde-Thomson: column 3, lines 6-17, ‘the trigraph analyzer determines a closest match’, ‘returns a corresponding language identifier and likelihood (corresponding to probability) value to the message inquiry unit).

Regarding **claim 44** (depending on claim 42), the rejection is based on the same reason described for claim 43, because the claim recites same or similar limitation(s) as claim 43.

Regarding **claim 45** (depending on claim 42), the rejection is based on the same reason described for claim 12, because the claim recites same or similar limitation(s) as claim 12.

Regarding **claim 46** (depending on claim 42), the rejection is based on the same reason described for claim 13, because the claim recites same or similar limitation(s) as claim 13.

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***Conclusion***

9. Any response to this office action should be mailed to:  
Commissioner of Patents and Trademarks, P.O. Box 1450, Alexandria, VA22313-1450  
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Hand-delivered responses should be brought to:

Crystal Park II, 2121 Crystal Drive, Arlington. VA. Sixth Floor  
(Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to I Han whose telephone numbers is (703) 305-5631. The examiner can normally be reached on Monday through Thursday from 9am to 7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richmond Dorvil, can be reached on (703) 305-6954.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

QH/qh

June 24, 2004

  
RICHEMOND DORVIL  
SUPERVISORY PATENT EXAMINER